

Claims

What is claimed is:

- [c1] A drill bit comprising:
 - a bit body having at least one blade thereon; and
 - at least one polycrystalline diamond compact cutting element disposed on the at least one blade, wherein a diameter of the at least one polycrystalline diamond compact cutting element is within a range of greater than 19.0 mm, but less than 25.0 mm.
- [c2] The drill bit of claim 1, wherein the at least one polycrystalline diamond compact cutting element comprises a substrate and a polycrystalline diamond layer thereon, and interface between the substrate and the diamond layer being non-planar.
- [c3] The drill bit of claim 1, wherein the at least one polycrystalline diamond compact cutter comprises a polycrystalline diamond layer having a thickness between 0.140 inches and 0.240 inches.
- [c4] The drill bit of claim 3, wherein the polycrystalline diamond layer has a thickness of 0.180 inches.
- [c5] The drill bit of claim 1, wherein the diameter of the at least one polycrystalline diamond compact cutting element is within a range of about 21.0 mm to 23.0 mm.
- [c6] The drill bit of claim 4, wherein the diameter of the at least one polycrystalline diamond compact cutting element is 22.0 mm.
- [c7] The drill bit of claim 1, wherein the at least one polycrystalline diamond compact cutter has a substantially elliptical shape and the diameter of the at least one

polycrystalline diamond compact cutter is defined with respect to a major axis thereof.

- [c8] The drill bit of claim 7, wherein the at least one polycrystalline diamond compact cutter has a major axis having a diameter of 22.0 mm.
- [c9] The drill bit of claim 1, wherein an exposure of the at least one polycrystalline diamond compact cutter is greater than 11.0 mm.
- [c10] A drill bit comprising:
 - a bit body having at least one blade thereon; and
 - at least one polycrystalline diamond compact cutting element disposed on the at least one blade, the at least one polycrystalline diamond compact comprising:
 - a polycrystalline diamond layer;
 - substrate bonded to the polycrystalline diamond layer, an interface surface between the diamond layer and the substrate being non-planar; and
 - wherein a diameter of the at least one polycrystalline diamond compact cutting element is greater than 19.0 mm.
- [c11] The drill bit of claim 10, wherein the polycrystalline diamond layer has a thickness between 0.140 inches and 0.240 inches.
- [c12] The drill bit of claim 11, wherein the polycrystalline diamond layer has a thickness of about 0.180 inches.
- [c13] The drill bit of claim 10, wherein the diameter of the at least one polycrystalline diamond compact cutting element is within a range of about 21.0 mm to 23.0 mm.
- [c14] The drill bit of claim 13, wherein the diameter of the at least one polycrystalline diamond compact cutting element is 22.0 mm.

[c15] The drill bit of claim 10, wherein the at least one polycrystalline diamond compact cutter has a substantially elliptical shape and the diameter of the cutter is defined with respect to a major axis thereof.

[c16] The drill bit of claim 15, wherein the at least one polycrystalline diamond compact cutter has a major axis having a diameter of 22.0 mm.

[c17] The drill bit of claim 10, wherein an exposure is greater than 11.0 mm.

[c18] A drill bit comprising:
a bit body having at least one blade thereon; and
at least one polycrystalline diamond compact cutting element disposed on the at least one blade, the at least one polycrystalline diamond compact comprising:
a polycrystalline diamond layer having a thickness greater than 0.140 inches;
a substrate bonded to the polycrystalline diamond layer, an interface surface between the substrate and the diamond layer being non-planar; and
wherein a diameter of the at least one polycrystalline diamond compact cutting element is greater than 19.0 mm and is less than 25.0 mm.

[c19] The drill bit of claim 18, wherein the polycrystalline diamond layer has a thickness of between 0.140 inches and 0.240 inches.

[c20] The drill bit of claim 18 wherein the polycrystalline diamond layer has a thickness of about 0.180 inches.

[c21] The drill bit of claim 18, wherein the diameter of the at least one polycrystalline diamond compact cutting element falls within a range of 21.0 mm to 23.0 mm.

[c22] The drill bit of claim 21, wherein the diameter of the at least one polycrystalline diamond compact cutting element is 22.0 mm.

[c23] The drill bit of claim 18, wherein the at least one polycrystalline diamond compact cutter has a substantially elliptical shape and the diameter of the cutter is defined with respect to a major axis thereof.

[c24] The drill bit of claim 23, wherein the at least one polycrystalline diamond compact cutter has a major axis having a diameter of 22.0 mm.

[c25] The drill bit of claim 18, wherein the exposure is greater than 11.0 mm.

[c26] A drill bit comprising:
a bit body having at least one blade thereon; and
at least one polycrystalline diamond cutting element disposed on the at least one blade, the at least one polycrystalline diamond cutting element having an exposure greater than 11.0 mm, the at least one polycrystalline diamond cutting element comprising:
a polycrystalline diamond layer having a thickness of greater than 0.140 inches;
a substrate bonded to the polycrystalline diamond layer, an interface surface between the diamond layer and the substrate being non-planar; and
wherein a diameter of the at least one polycrystalline diamond compact cutting element is 22.0 mm.